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ABSTRACT

During the past ten years, research on second language acquisition (SLA) has expanded: at the same time, different models and hypotheses have been proposed to explain and account for the processes underlying SLA. Four models seem to be dominant at the present time: (1) the monitor model, which distinguishes between implicit or unconscious language acquisition and explicit language learning: (2) the discourse approach which emphasizes the relationship between the form and function of linguistic structures: (3) the neurofunctional perspective, which looks at SLA processes through two interrelated systems, macro-behavioral and neurofunctional, and which distinguishes between primary, secondary, and foreign language learning: and (4) the acculturation model, based on social and psychological factors, which claims that acculturation is the major cause of second language acquisition. Each model is reviewed, evaluated, and critiqued from an experimental perspective. It is argued that the acculturation model may establish the starting point from which experimental research on SLA might be pursued. (Author/AMH)

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On the Plausibility of Second Language Acquisition Models:

An Experimental Perspective *

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ABSTRACT

In the last decade, research on second language acquisition (SLA) expanded enormously. Many aspects of SLA including phonology, morphology, syntax, and discourse have been investigated semi-empirically or empirically. At the same time, researchers have proposed different models and hypotheses intended to explain and account for the processes underlying SIA. At present, four SLA models are dominant: the monitor model (Krashen, 1978), the discourse approach (Hatch, 1978), the

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acculturation model (Schumann, 1978), and the neurofunctional perspective (Lamendella, 1978). Though the assumptions underlying each model may be well motivated, none of proponents, as yet, has suggested systematic methodologies to investigate the validity of the statements evolved from these models.

This paper is an attempt to review, evaluate, and critique the validity of these models from an experimental perspective. It argues that the acculturation model may establish the starting point from which we might pursue experimental research on SLA.

INTRODUCTION

In the last few decades, research in SLA has developed in many dimensions. A survey of the literature indicates that there has been a methodological continuum from subjective and intuition-based research at the one end to controlled experimental research at the other. Judging a particular methodology or putting preference on one method rather than the other, without justification, is problematic because the term 'research' has various interpretation.

Research may be defined as a systematic approach to investigating a problem and finding answers to questions (Shavelson, 1980). There are many systematic approaches to arswering questions. The approach can be historical, descriptive, developmental, case study, field study, or experimental (Issac, 1976). Therefore, in order for an investigation to be acceptable, it does not have to be experimental, nor should experimental research per se be preferred over any other type of inquiry. Each systematic way of finding answers to questions has its own pecularities, assumptions, techniques, pitfalls, and advantages.

These different types of research, however, are not unrelated to one another. In most cases, there is a progression from intuition towards experimentation. Generally, a simple event, an appealing idea, or a preliminary investigation of empirical data has stimulated scholars to formulate questions,

state hypotheses and build theories. The findings of preliminary investigations may either reject or support the hypotheses evolving from a theory. In the latter case, there is a desire to accumulate more information and evidence to stabilize the principles of the theory. When enough evidence is gathered, the final step would be to experimentally validate the hypotheses and draw some potentially generalizable conclusions from the theory.

Obviously for each step of the hypothesis testing process, different types of research are required to substantiate the theory. Prior to theory building, it may be an intuition or an unusual event that helps an investigator formulate the theory. Later, anecdotal evidence, observational data, findings of case studies, evidence from diary studies, and many other sources can be utilized to make the theorist believe that the theory accounts for a reasonable portion of the systematic variation in a certain phenomenon.

Up to this point in the process, no conclusive or generalizable statements can be made about the phenomenon in question. Later, researchers usually design an experiment, on the bases of previous observations, in order to empirically validate the theory. Only then, can the claims of such a theory be extended to cover all instances and even be generalized beyond the observed samples.

Applied linguistics, a rapidly growing branch of the social sciences, does not seem to be (or at least should not be) an

exception. Linguists, psycholinguists, and sociolinguists have developed theories about the many facets of language behavior. First and second language acquisition, contrastive and comparative studies, discourse analysis, language teaching, and language testing are among the areas being investigated. In some areas, theories have been formulated, tested, and either rejected, modified, or supported. In some of these fields, especially SLA, research seems to be at the stage of theory building. The existing theories have not yet moved towards the experimental phase of theory construction to be empirically validated.

Among many others, four SLA models have been dominant in the field: the monitor model (Krashen, 1976; 1977; 1978; 1979; 1980), the discourse approach (Hatch, 1977; 1978; 1979; 1980), the neurofunctional perspective (Lamendella, 1977; 1978; 1979), and the acculturation model (Schumann, 1975; 1976; 1977; 1978).

It is realized that terms such as theory, model, approach, and perspective have different definitions in the philosophy of science. However, to avoid definitional complexities, these terms are used interchangably in this paper.

These models, however, are subject to pertinent questions, the most crucial of which is their empirical validity. Except for the acculturation model, which deals, at least, with definable variables, they all seem to deal with untested and unidentified hypotheses. Furthermore, all of these models seem

to be discrete and isolated modules of the whole integrated process of SLA. Although they are intuitively appealing, their plausibility will remain questionable until they prove to be testable and undergo the scrutiny of experimental investigation.

The purpose of this paper, then, is to review and evaluate the four theories from an experimental perspective. The procedures will be to: (a) briefly summarize each theory, (b) examine the validity of the statements evolving from each theory, (c) review empirical evidence reported on in favor or against each theory, and (d) discuss the interrelationships among the four theories.

MODELS OF SLA

I. The Monitor Model

This model, introduced by Krashen in a series of papers referred to above, was originally developed as a model for second language performance. However, it has lately been expanded as the monitor theory to cover language acquisition/learning as well. The theory distinguishes between two different means of internalizing a target language: an implicit way termed unconcious language acquisition, and an explicit way called language learning. SLA is claimed to be very similar to child language acquisition in that it requires meaningful interaction in the target language. But conscious language learning is available to the performer only as a

monitor to alter the output of the aquired system.

As the model has developed, there seems to be a smooth shift which has generally deemphasized learning and emphasized acquisition. Krashen (1976) states that:

> Adults can not only increase their second language proficiency in informal environments, but may do as well or better than learners who have spent a comparable amount of time in formal instruction (p. 158).

This implies that acquisition is central to SLA and learning, the monitor, peripheral. Krashen (1976) provides extensive evidence from research areas that is consistent with the monitor theory. Although the accuracy of these results is not at question, it is possible to state alternative interpretations for some of them.

If it is true that language users' performance is a manifestation of their competence (or internalized language abilities), one can gain insights into language learners' competence via performance. One of the most defensible means to systematically investigate language learners' performance is to use one or several tests. The term 'test' should not give the impression of paper and pencil tests only. A test refers to any systematic attempt to gather quantifiable information on an attribute (Thorndike, 1971). It could be a paper and pencil test, an oral interview, a composition and so forth. Test scores, however, can sometimes lead to different interpretations and conclusions with respect to a given hypothesis from a given

theory.

According to the monitor model, there is a natural order of acquisition for grammatical morphemes when the performance is monitor-free (this is when the focus is on communication rather than form, with little time available). But when the performance is monitored, the natural order is distorted. Regardless of various statistical and methodological inadequacies in morpheme studies (Rosansky, 1976, Anderson, 1977; 1978, Brown, 1980), and regardless of their relative contribution to the whole process of SLA, Krashen himself found discrepancies among the results reported in morpheme studies.

For example, following Fuller (1978), Krashen administered the SLOPE test to a group of acquirers (those who do not monitor) and to a group of learners (those who do monitor). He found no difference in the rank order of morphemes across groups. His interpretation was that both groups depended on their acquired system since the test did not encourage conscious monitoring. Or, learners and acquirers do not differ in their performance on the same task. Of course, an alternative interpretation could be that both groups did monitor and therefore, there was no difference between the groups' performance.

In another study, following Andersen (1976), Krashen, et, al. used only one group of subjects but required two different tasks. The subjects were asked to write a composition, both edited (monitored) and non-edited (not monitored). Again, they

found no difference for the order of morphemes for both tasks. Their interpretation was that students were concerned with meaning and communication rather than form (though the subjects were explicitly told to correct whatever they could, which requires monitoring.) This implies that the same learners or acquirers did not differ in their performance on different tasks. Thus, neither the task nor the performer showed significant relation to the predictions of the theory in respect to the use of the monitor.

To justify these inconsistencies and non-differential performances, Krashen refers to Larsen-Freeman's investigation on morpheme accuracy order (1975) and concludes that it takes a discrete-point test to bring out conscious learning. This means that a discrete-point test would result in an unnatural order and other types of tests (integrative, pragmatic, and functional) would yield a natural order.

This distinction is another controversial point among the claims made by the monitor theory. The difference between discrete-point (DP) and integrative (IN) tests is an unsettled issue in the field of language testing. Following Oller (1973; 1976), Briere (1979), Hinofotis (1976), and many others, the distinction between the two is not a matter of type but of degree. In other words, there is a continuum ranging from highly DP tests at the one end to highly IN tests at the other. The problem, however, is to determine the point at which one type of test ends and the other begins.

On the one hand, Oller (1978) has defined IN tests, including pragmatic tests, as meeting two requirements: time to process the task and context for the use of language. Thus, it could be claimed that any test which does not meet these conditions is not an IN test. This somewhat vague distinction between DP and IN tests, then, would categorize tests such as grammar, vocabulary, and auditory discrimination tasks into DP; and cloze, dictation, reading and listening comprehension into IN types of tests.

On the other hand, I have argued elsewhere (Farhady, 1979a) that in spite of theoretical controversies, there is no statistical differences between DP and IN tests. They provide almost identical information about the learners' language abilities. No matter how DP or IN a given test may be, the outcome of the tests is very much the same. I have also demonstrated that factor such as educational and linguistic background, which are assumed not to be directly relevant to language proficiency, are more influential on examinee performance than is the type of the test (Farhady, 1979b).

According to the monitor theory, on the basis of the learners's performance on DP and IN tests one can identify the processes which might have occured. Since DP tests are not always monitored and IN tests are not always monitor-free, then the distinction between learned and acquired language based on performance on DP and IN tests is an unjustified one.

For instance, the monitor theory would predict that if

language learners and language acquirers, both at a similar proficiency levels, are given a DP test, the learners would score higher because they have the assistance of the monitor. On the other hand, if they are given an IN test, the reverse should happen because the acquirers have internalized IN types of activities. There is no evidence in the literature, to my knowledge, that substantiates such predictions.

Most people may agree that there is conscious and unconscious learning and performance (McLaughlin, 1979). The distinction could be made by investigating social, psychological, discourse, and other factors involved in communication. It may be safe to assume that monitoring would depend on the type of language activiyies and the circumstances under which they are performed. For example, as Krashen observes, learners could not easily monitor their performance in an oral communication situation; whereas it may be easy to monitor their performance on paper and pencil tests. However, this does not necessarily mean that conscious or monitored performance is learned and unconscious or non-monitored performance is acquired.

It is also quite possible for native speakers of a language to monitor their performance depending on the social setting (for example, when they are talking to the Dean of the university, writing a term paper, giving a public lecture, etc.). This does not mean that they have learned the knowledge underlying these types of activities, but have acquired the

knowledge underlying other activities (e.g. when talking to their friends). Furthermore, a second language learner may not monitor his performance on some occasions and this does not mean that he has acquired that portion of his performance.

Thus, although there may be a distinction between monitored and non-monitored performances, it may not predict the processes involved in internalizing the knowledge in two ways and/or by two different systems. In any critical situation such as test taking or formal public interaction, monitoring could be the controlling factor in the performance of the speaker/writer. It may not have much to do with a second or first language learner per se, though the degree of monitoring could vary depending on the speech events or speech acts, as well as the proficiency of the performer.

There may also be a distinction between monitored and non-monitored learning. But this may not mean that the monitor for learning is the same as the monitor for performing. Nor may it imply that whatever is learned through the monitor will also be performed through the monitor. The parameteres of the two monitors may be quite different and it may take a long time before any conclusive statement can be made about their characteristics.

These problems with the principles of the theory are, I believe, reasons for inconsistent outcomes of the research projects outlined above. Krashen (1977) admits that learning or monitoring is limited to individuals, grammatical rules, and

situations in which one performs a task. However, these limitations are not explained in a systematic way, nor is sufficient reasoning for these ad-hoc uses of the monitor given. Krashen (1977) states:

> ... The monitor is used only by some people, for some rules, and for more artificial language use situation (p. 154)

These limitations on the use of the monitor would mean that learning, in comparison to acquiring, has a very minor, if not negligible, role in SLA because it refers to a system which functions inconsistently. One might argue that the discrepancies in the results are variations rather than inconsistencies. However, there are two kinds of variations: consistent and inconsistent. If the variation is consistent, it should be captured by empirical investigation. And if the variation is inconsistent, it is the error variation, and therefore inconsistent and unpredictable. The use of the monitor by language learners seems to entail the error variation. It cannot be empirically validated because it is inconsistent over rules, over individuals, over situations, and probably over many other factors. But it seems to me that the inconsistencies in the use of the monitor are due to inadequate interpretations of the monitor by the theory because it may be quite systematic with respect to the rules of language use .

These shortcomings do not, I believe, invalidate the

theory. Nor do they diminish its contribution to our understanding of the various aspects of SLA. In fact, the monitor theory has made several valuable contributions to both second language research and pedagogy.

The first and the most important contribution is the distinction between learning and acquisition. I believe this distinction with the modifications suggested in this paper would serve as a valuable research area for SLA. The second contribution is the recognition of instruction as an important factor in learning a language. The third contribution is the specification of classroom activities. The theory suggests that the instructional materials should be presented in a communicative way and at a certain level of complexity in order to match the learners' competence.

These are just a few pedagogical implications of the theory which are mentioned here to avoid underestimating the theory. More importantly, the theory seems to be a dynamic rather than a static one because it has been modified by the findings of research results. This flexibility is an important and valuable characteristic of the monitor theory.

II. The Discourse Approach

Hatch (1977) has suggested discourse analysis as a methodology for the study of SLA with the belief that it may provide more information about the processes underlying SLA. The primary motivation for this suggestion seems to be the

importance of the relaticnship between the form and function of linguistic structures. In many cases, a given sentence may have mcre than one function, and more than one sentence may serve the same function. Wagner-Gough (1975) has criticized SLA research, especially morpheme accuracy studies, in that they deal exclusively with the form of the morphemes and ignore their functions. Wagner- Gough presents evidence that it is more meaningful to talk about the form of the structures along with the function(s) they may serve.

Many people assume that language learning starts with learning single words and moves towards learning more complex structures. According to the discourse approach, however, language learning evolves out of learning how to carry on ccnversations. In other words, one learns how to converse, how tc interact verbally, and in the process one learns a language (Hatch, 1977). According to the discourse approach, syntactic structures develop frcm communicative interactions and most language acquisition processes are the result of conversational growth.

Before going into the details of this approach, it is necessary to give a working definition of <u>discourse analysis</u>. Discourse analysis should not be assumed to be synonymous with ccnversational analysis. Nor should it be interchangeably used with the analysis of input. Discourse analysis may be defined as the investigation of any meaningful and contextualized forms of language and the effort to identify the relationship between

their forms and their functions in real communicative situations. It does not matter if the discourse is written, oral, or in any other form of symbolic representation of the language (e.g. sign language, computer language, or pictorial language). What does matter, however, is that each type of discourse has its own syntactic, semantic, and functional structures. These characteristics are important in conveying meaning via form. Thus, conversational analysis is one branch of discourse analysis. Also, while input is provided through discourse, it is not the discourse itself.

The relation between form and function is easy to conceptualize but difficult to identify, to define operationally, and to investigate empirically. However, following sociolinguists and anthropologists (Hymes, 1972, Searle, 1969), Hatch (1979) and Hatch and Long (1980) have presented certain units of analysis which include speech situations, speech events, and speech acts. These categories seem to have hierarchical structure. In other words, each speech situation may include several speech events, each of which in turn may consist of several speech acts. For example, at a party (which is a speech situation), there may be several conversations (speech events) going on among people; and within each conversation, several syntactic patterns (speech act) may control the conversation (Gumpers, 1972). Speech acts can be directives, commissives, expressives, and so forth (Hatch & Long, 1980).

The characteristics of a discourse unit will depend on factors such as situation, background information of both the speaker and listener, presuppositions, and many other principles of discourse. Furthermore, depending on the situation, discourse may be planned or unplanned. Social settings and psychological factors could contribute to the degree of formality of discourse. For example, it is conceiveable that one would have a planned discourse in a very formal government reception. The parameters of planned vs. unplanned discourse are not determined as yet. However, discourse units could be placed along a continuum ranging from planned to unplanned performances. Of course, each type of discourse unit will have their own structure though they may share some common characteristics.

Discourse analysis, in a sense, attempts to account for functions of syntactic structures by using utterances as the meaningful units of language. By analyzing contextualized units of language, it also modifies the sentence-based SLA research, which hardly accounts for the use of those sentences in real communicative settings. In short, the unit of linguistic analysis is, according to the discourse approach, the discourse unit rather than some unrelated sentences.

A close look at this approach reveals that there are still some questionable points. For example, in this approach the reasons that why people should be willing to interact with each other in order to learn a language are not clarified. In some

cases, it is conceiveable that people would not want or need to converse with the target language group. Even if they do, the approach does not specify the factors which may stimulate their desire for conversation. Furthermore, there are situations in which people learn languages not for speaking but for other purposes such as reading or writing. Finally, just the availability of language in the environment does not necessarily guarantee that one will learn a language.

It is true that discourse is one of the most important factors in SLA because it provides the raw material in a coherent and meaningful way. Without discourse, there is nothing to learn. Nevertheless, discourse by itself cannot guarantee learning either. However, Hatch (1979) has clarified most of these issues. She has discussed, in detail, the conditions which are necessary for input to facilitate learning processes. (In fact there seem to be many similarities between Hatch's characterization of simplified input and some of Krashen's recent hypotheses on the monitor model, e.g. the input hypothesis and the net hypothesis.)

Hatch's discussion of simplified input has improved the discourse approach in many dimensions. For example, she believes that appropriate simplified input "promotes communication, establishes an affective bond, and serves as an implicit teaching mode (p.1)." She also believes that there are various factors (regression, matching, and negotiation) which help native speakers to adjust their speech towards the

learner's proficiency level. Furthermore, she explains the importance of social settings on input and argues that learning environments influence SLA considerably.

These clarifications on the characteristics of input and their relationship to SLA, which I believe could apply to other types of discourse as well, have made discourse analysis a very promising approach for research in SLA.

III. The Neurofunctional Perspective

The neurofunctional perspective, which is said to be a metatheory rather than a theory, attempts to explain the processes of SLA from a functional point of view. It looks at SLA processes through two different, but interrelated systems: macrobehavioral and neurofunctional. Macrobehavioral systems are concerned with "logical characterizations of the regularities inherent in second language speech data" (Lamendella & Selinker, 1978, p.47). Neurofunctional systems are defined as a "functional characterization of information processing 'machines' anchored in anatomical structure and physiological energy patterns" (Lamendella & Selinker, 1978, p. 47). In respect to the abstractness of these two systems, the authors state:

> A large measure of the differences between macro-behavioral and neurofunctional perspectives arises from two very different notions of 'system,' both notions of course being theoretical constructs whose correspondence with any sort of 'objective

reality' is an open philosophical question (p. 47).

The theory distinguishes between primary, secondary, and foreign language learning (Lamendella, 1977). Normal language acquisition processes occur from age two to five years, no matter how many languages are involved. According to this perspective, both monolingual and bilingual primary language acquisition are definable by reference to a long list of traits which exist in accord with basic principles of neural organization. Lamendella states that the neural systems specific to language are to some extent innate and genetically programmed. There are identifiable infra-systems, constructed within a given developmental stage of a given neurofunctional system, which operate to accomplish behavioral goals.

This perspective attempts to explain SLA in terms of complicated neurofunctional systems. However, it seems that this perspective is not exclusive to language learning per se, but an attempt to formulate a more global theory for the human capacity to learn. The whole information processing system, of which language learning is a subpart, could be related to this perspective. Lamendella (1979) believes that:

> When first confronted with the need to acquire new information structures as the basis for performing a novel behavior task, a learner must identify the functional hierarchy best suited to this learning, then establish the appropriate level and subsystems within the hierarchy with which to begin the learning process. It seems to be a general characteristics of this type of learning that the novel behavior task is initially

> carried out by the executive component of the responsible neurofunctional systems operating in the monitor mode (p. 15).

Thus he implies that neurofunctional systems are responsible for learning new information in a general sense and that the neurofunctional perspective seems to be a way of looking at these responsible elements.

The authors use complex terminologies such as perspective, theory, metatheory, and so forth to represent the least well known functions of the human information processing system. However, there seems not to be compelling evidence that neurofunctional systems contribute more to language acquisition than to any other learning task. Furthermore, as the developers of the perspective claim, the ultimate nature of these metatheoretical systems is not identifiable at present. However, assuming that people have healthy brains, and all external and internal variables are kept constant and equal, then the crucial but open question is whether all neurofunctional systems would operate in the same manner for all people. It would seem that, individual variations, and the degree of attained competence in a given language do not appear to be accounted for by the neurofunctional systems. Therefore, what may make the individual differences is variables outside the human brain and not the brain itself.

The neurofunctional perspective, therefore, could be considered a general way of looking at human capacity for

learning any kind of novel behavior and not specifically language behavior. Of course, no one would deny the importance of the functional processes of the brain. Nevertheless, if the assumption of 'equal brain capacity under equal conditions' can be postulated to be true, then the neurofunctional perspective cannot have a unique influence on SLA. The neurofunctional systems could be stimulated by other factors to operate in varying range of speed and accuracy.

The basic problem with this type of inquiry about a phenomenon is the difficulty of providing empirical evidence for it. No one knows what the so-called 'innate ability' is and how much of language acquisition is accomplished by it. Furthermore, how the two different systems interrelate and operate systematically is not clear at present and probably cannot be clarified for a long time. The major difficulty is that one cannot use a healthy brain for research purposes. The abstractness of the claims of this perspective could entail numerous questions to which answers would be almost impossible at present. Research in the social sciences and even in the biomedical sciences has a long way to go before it can confirm the accuracy and validity of the characteristics of this perspective.

Of course, this does not mean that we should abandon pursuing this type of abstract thinking. It is conceivable that present research techniques are not adequate to investigate the claims evolving from the neurofunctional perspective. However,

it seems unreasonable to assume that SLA is based on neurofunctional systems alone. Even if it were possible to investigate these systems empirically, the outcome might not account for the social and discoursal variables. Therefore the neurofunctional systems are neccessary but not sufficient requirement for SLA because there are many external variables involved in the preocesses of SLA.

IV. The Acculturation Model

The acculturation model, developed by Schumann, is based on social and psychological factors. "Acculturation" is defined as the social and psychological integration of the second language learner with the target group. There is a taxonomy of factors which are believed to be important in the process of SLA in natural contexts. The major claim of the model is that acculturation, which is a cluster of social-psychological factors, is the major cause of SLA (Schumann, 1976; 1977; 1978). Schumann states that any learner can be placed along a continuum ranging from social-psychological distance to social-psychological proximity with the speakers of the target language. The degree of language acquisition, then, would correlate with the degree of the learner's proximity to the target group.

According to this model, there are two types of acculturation. The first type of acculturation takes place when the learner is socially integrated with and psychologically open

tc the target group. The second type of acculturation has all the characteristics of the first type except for the psychological openness of the learner. It is claimed that both types of acculturation are sufficient to cause SLA. Social variables relate to social groups which are in a contact but speak different languages. Some of these factors are social distance, integration, enclosure, and cohesiveness. Psychological factors relate to language learning by individuals and include culture shock, language shock, motivation, ... etc.

Schumann cites some supporting evidence from different studies that these variables do, in fact, enhance or inhibit SLA. He also believes that psychological factors, especially motivation may have more influence on SLA than social factors (Stauble, 1977). It is interesting to note that according to this model, variables other than acculturation are of minor or moderate importance for SLA. For example, instruction is assumed to have no important role in SLA (except for a few exceptional cases). In this regard, Schumann (1978) states:

> ... educational institutions are really only free to manipulate teacher, method and text variables. I believe that these variables are so weak in terms of the total language learning situation that no matter how much we attempt to change them we will never achieve much more success than we are achieving now (p. 31).

In my opinion, the acculturation model takes into account the most important factors which may be involved in SLA. This model is appealing because it attempts to explain the potential

"why's" of SLA. However, there remain some unanswered questions with the model. Schumann himself states that the model only accounts for language learning under conditions of immigration. He also cautions the reader about variables other than acculturation which may influence SLA.

Schumann believes that the development of a typology of variables is important and must be continued. It is not clear, however, how long or to what extent the continuation of such typologies is necessary. Ochsner (1979) argues that the number of variables in such a typology is arbitrary. To some extent, Ochsner is correctly pointing at one of the weaknesses of the model. The reason that the model is susceptible to such seemingly logical arguments is that it has been unable to provide criteria or empirical evidence for the necessary number of variables. However, it is this author's view that if one looks at the model from an experimental perspective, such criticisms will become unjustified.

Had research along the lines proposed by this model progressed enough to determine the amount of overlap and/or the degree of relationships among social and affective variables as well as their influence on SLA, then neither the number nor the selection of the variables would have been considered arbitrary. For example, if it were shown that 90% of the systematic variation in SLA is due to the acculturation factor, then the remaining 10% would not be terribly significant. Also, during experimentation, some of the factors within the acculturation

model would probably be eliminated because of their overlap with other variables or their negligable contribution to SLA. And the remaining variables, which would be empirically verifiable, would not yield to counter arguments.

One of the most controversial claims of the model, however, is the way the effects of these variables are interpreted rather than their number. On the one hand, the claim that these variables are the cause of SLA does not comply with the principles of experimental investigation. In the social sciences the results are subject to marginal error due to prediction, reliability and validity of the instruments and other research obstacles. Therefore, at first glance, the causal claim of the model is open to question.

On the other hand, the causal hypothesis is one of the advantages of the acculturation model because most sophisticated statistical analyses require a theory which calls for empirical verification. In this respect, then, the causal claim of the acculturation model builds a theory on which a statistical analysis can later be applied. If it was not hypothesized that acculturation is the cause of SLA, the appropriate statistical procedure could not be applied to either support or reject the claims of the theory.

The term 'cause' may be defined as the unique contribution of a variable to a particular phenomenon. If it could be determined, for example, that 10% of the variation in a phenomenon is due to one and only one specific variable, then it

could be claimed that the given percent is caused by that variable. Therefore, using the term 'cause' or any other term such as the most important or the most determinant will not increase the validity of the claims because all of them would be interpreted in terms of the unique variance they account for.

The model is problematic, however, in that the concept of acculturation and what it entails is too complex to be operationally defined and experimentally tested. The authors of the Heidelberg research project report (1976) seem to agree on this point by stating:

> ... although we know that many psychological factors contribute crucially to the 'result' of learner varieties, we were not able (and did not in fact succeed in) to operationalize the important concept of 'motivation', 'attitude', etc. in a meaningful way (p. 8).

However, this complexity does not imply that we should abandon our attempts to measure or explore acculturation factors.

Another problem with the model is that it delibrately excludes other potentially important variables (such as cognitive and instructional factors) in SLA. Of course detailed investigation is necessary to determine these variables, their interrelationship with one another, and their correlation with and contribution to SLA.

Conclusions

Obviously, the main goal of SLA research, either short term or long term, is to somehow account for the very complex nature of SLA. That is, the goal of the theories is (or should be) to explain the interlanguage system of the learners in a scientific way. In respect to these models, it seems that the acculturation model attempts to answer questions dealing with the "why's" of SLA. The neurofunctional perspective may eventually explain "how" SLA occurs. The monitor theory deals with the ways a second language is learned/acquired and performed. And finally, the discourse approach attempts to develop strategies for researching the relationship between linguistic input to and output from second language learners in authentic situations. Therefore, each model has its own place in the whole process of SLA. There may be other models such as a cognitive approach (Larsen-Freeman, 1980), a psycholinguistic model, and so forth, each of which would look at SLA from slightly different point of view.

If we want to claim that SLA is a social science, we should comply with the principles of established social sciences. In any case, and with any number of models, the main objective should be to explain the SLA phenomenon in a reasonably scientific way. Otherwise the outcome and claims of almost any theory will remain questionable until the theory is proven to bely empirically testable.

I would like to make it clear that the comments made in

this paper should not be interpreted as discredits to the nature of the four models discussed. Rather, I hope that the suggestions made and questions raised, if reasonable, will be considered as potential ways of improving the theories. The intricate process of SLA is, at least from my point of view, too complex to be explained by any single theory. For example, none of these models deals with aspects of foreign language learning in comparison to second language learning (Bebee, 1979). Furthermore, there could be numerous unknown factors beyond the hypotheses of a given model or person who develops the model. This is what all theory building and theory modification are about. If the idea of incompleteness rather than incorrectness of these models is conveyed in this paper, it would seem that its goal has been accomplished.

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